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Nelson, Karen J. and Duncan, Margot E. and Clarke, John A. (2009) *Student success : the identification and support of first year university students at risk of attrition*. Studies in Learning, Evaluation, Innovation and Development, 6(1). pp. 1-15.

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Student success: The identification and support of first year university students at risk of attrition

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Abstract

The engagement behaviour of 1,524 student-enrolments (“students”) in five first year units was monitored and 608 (39.9%) were classified as “at risk” using the criterion of not submitting or failing their first assignment. Of these, 327 (53.8%) were successfully contacted (i.e., spoken to by phone) and provided with advice and/or referral to learning and personal support services while the remaining 281 (46.2%) could not be contacted. Nine hundred and sixteen students (60.1%) were classified as “not at risk.” Overall, the at risk group who were contacted achieved significantly higher end-of-semester final grades than, and persisted (completed the unit) at more than twice the rate of, the at risk group who were not contacted. There were variations among the units which were explained by the timing of the first assignment, specific teaching-learning processes and the structure of the curriculum. Implications for curriculum design and supporting first year students within a personal, social and academic framework are discussed.

This article has been peer-reviewed and accepted for publication in *SLEID*, an international journal of scholarship and research that supports emerging scholars and the development of evidence-based practice in education.

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ISSN 1832-2050

Students’ first year experience is a determining factor in attrition

Bridges (2003) conceptualised transitions in higher education as a sequence of student identities—pre-enrolment identity, tertiary student identity and professional identity. These identities overlap and coexist to a degree but there is consensus that the first transition from pre-enrolment to student is crucial because the first year experience has been recognised as important foundationally to student success at university (Harvey, Drew, & Smith, 2006; Krause, Hartley, James, & McInnis, 2005; McInnis, James, & Hartley, 2000; Reason, Terenzini, & Domingo, 2005, 2007; Tinto, 2001; Upcraft, Gardner, Barefoot, & Associates, 2005). This importance has been recognised for several decades as reflected in such seminal works as Pascarella and Terenzini (1991) and Tinto (1987) and extends across personal, social and academic competences (Reason et al., 2005, 2007). Further, this is also when attrition is at its highest (McMillan, 2005; Nora, Barlow, & Crisp, 2005; Schrader & Brown, 2008; Trotter & Roberts, 2006).

The literature on university attrition is dense, plentiful and universal as indicated by a representative selection: From Australia – Hinton (2007) and Marks (2007); from the United Kingdom (UK) – Bennett, Kottasz, and Nocciolino (2007) and Yorke and Longden (2008); and the United States of America (USA) – Pascarella and Terenzini (2005) and Tinto (1993). Broadly, the research indicates that no single cause has been identified to explain why students leave university before the completion of their course; rather it is multiple issues and variables in the personal, social and academic domains, including academic and social adjustment, varied or unmet expectations, extra-curricular commitments, financial pressures, lack of student-institution fit, isolation, inadequate orientation and academic induction activities, poor attendance patterns, adverse teaching, learning and formative and summative assessment experiences (e.g., Kift & Nelson, 2005; Tinto, 1993, 1995; Trotter & Roberts, 2006). The commitment of the institution to the student is a critical factor in retention (McInnis et al., 2000) and since attrition is highest amongst first year students as indicated above, universities need to initiate, support and promote student personal, social and academic engagement in the early weeks of first year to retain students and stop the drift away from university life (Nelson, Kift, & Clarke, 2008). But how is this best done?

Student success in first year is a shared responsibility

The responsibility for student engagement lies not only with students but also with institutions and their teaching staff who must provide the necessary “conditions, opportunities and expectations” for such engagement to occur (Coates, 2005, p. 26). The sombre realities of the contemporary Australian tertiary sector such as diminished government funding and the resulting large class sizes and casualisation of the academic workforce are conditions which exacerbate student disengagement. Increased levels of student employment whilst studying and the consequently necessary flexible course delivery schedules further reduce opportunities for engagement (Kift, 2004). In such an environment, an institutional commitment to enhancing and supporting student engagement can be seen as a measure of the quality of a university (Coates).

Reason et al. (2005, 2007) advocate that the personal, social and academic competences of students have to be addressed by institutionally-initiated engagement activities. They report and summarise evidence of a “connection between students' sense of support at an institution and their reports of increases in their social and personal competence” (Reason et al., 2007, p. 272). Of importance also is the connection across the areas of personal, social and academic competence. A reasonable assumption is that personal and social competence is determined in the main by out-of-class non-academic activities, but there is considerable evidence reviewed and summarised by Reason et al. that development in these areas is also attributable to their academic experiences. These relationships of the personal, social and academic dimensions, whether they be individual-institution or intra-individual, are also reflected in a recent review by Schrader and Brown (2008) who, in evaluating successful First Year Experience programs, considered that they “are directed towards the skills and knowledge that will enable students to adjust to college and be successful both academically and socially” (p. 317).

This suggests that institutional practices designed to foster student engagement should reflect a “whole of person” approach, a message repeated throughout the attrition-retention literature. For example, Trotter and Roberts (2006) in identifying activities that were successful in enhancing student engagement and retention through a series of case studies undertaken in UK institutions, concluded that spending time developing a holistic approach to enhancing the early student experience is worthwhile in preventing attrition. Troxel and Cutright (2008)

similarly report on a number of successful initiatives in the USA that “respond[ed] to the academic and social/personal needs of first year students” (p. 60) or “embrace[d] . . . personal, social, cognitive and community development” (p. 66). Other recent supportive comments on this issue can be found in Islam and Douglass (2006), Hunter (2006) and Schrader and Brown (2008).

This holistic and integrated approach to monitoring student engagement is central to the First Year Experience Program at the Queensland University of Technology (QUT).

Queensland University of Technology takes an holistic approach to first year experience

First year students at the QUT are exposed to the First Year Experience Program and could possibly be involved in the Student Success Project. Each is considered in turn.

The First Year Experience Program

The First Year Experience Program (FYEP) at QUT was established to reduce attrition and maximise learning and engagement amongst commencing students. The program recognises that first year students have particular personal, social and academic needs related to transition and adjustment to life as university students and aims

- to provide engaging learning experiences through an intentionally designed and enacted curriculum (QUT, 2002a);
- to facilitate access to practical and timely support services (QUT, 2002b); and
- to promote a sense of belonging (QUT, 2002c).

The FYEP aims to achieve these objectives by developing strategic alliances between academic and professional staff (Humphreys, Harper, Kift, & Nelson, 2006; Hunter, 2006). One of the key strategic alliances focuses on the processes involved in monitoring student engagement. Enacting this alliance enables academic and professional staff to identify and make proactive and coordinated interventions with students who may be at risk of not engaging in or of disengaging from their first year of study. This is being done through the Student Success Project.

The Student Success Project

In 2007, projects conducted as part of the Enhancing Transition at Queensland University of Technology (ET@QUT) Project (QUT, 2007) aimed at mapping the processes and resources used at that time to identify, monitor and manage students in their first year who were at risk of leaving QUT. This identified a lack of documentation of the processes and resources used and revealed an ad-hoc rather than holistic and systematic approach to monitoring student engagement. Consequently, a recommendation was made to introduce a centralised case management approach to student engagement. Further, in Semester 2 of 2007, author Duncan monitored the behaviour of 180 students who were deemed to be at risk because of consecutive absences or poor performance on the first assignment. She found, among other things, that substantially more of those students who were successfully contacted by phone and who had as a consequence utilised the recommended support services passed the unit than those who either were not contacted or did not access the recommended services (Duncan &

Nelson; 2008). This small qualitative pilot study and the philosophy of systemic case management of student engagement provided the genesis for the Student Success Project that is being reported on in this article.

The Student Success Project (SSP), a project for monitoring student engagement in a holistic and systematic way, is designed to enhance the experience of commencing students by facilitating both persistence and academic performance. Its focus is to create bridges for first year students between their classroom experiences and the discipline and specialist support services available to assist them with their learning and/or management of issues that may be interfering with their ability to focus on their learning and engagement. This is achieved by proactive and timely personal contact with those students who are classified as “at risk” of leaving QUT based on indicators that have been shown to be related to students opting out such as non-attendance or non-submission/failure of an assignment (Nelson, 2006).

The Student Success Project in action

The Contact Management System

Fundamental to the identification and management of students-at-risk is being able to identify these students and make timely support interventions with them. A prototype Contact Management System (CMS) was designed and built to support the operational and investigative needs of the project. The system collects and stores two types of information about students: descriptive and performance information. The descriptive data includes course and unit enrolment, equity group data, credit points completed, semester of entry and tertiary entry score, while the performance information data indicates the students’ academic progress and includes attendance at tutorials, participation in on-line environments, submission and marks of a first piece of assessment. Combinations of these data sets supports project operations such as identifying at risk students, scheduling phone calls to these students and recording call outcomes. Further, and importantly, because the database collects and stores information about the final assessment or examination and overall results, it allows research questions about persistence and academic results to be addressed—in essence, it facilitates an evaluation of the effectiveness of the SSP intervention.

Selection and training of Student Success Advisors

Student Success Advisors (SSAs) are the people who make contact with those students deemed at risk and are themselves students in the second or third year of their degree who have completed units similar to the target units participating in the project. They are chosen for their communication and telephone skills, their experience in mentoring or other student assistance roles, and their understanding of generic academic skills. The SSA team undergoes initial intensive training and ongoing weekly training during the semester that cover topics such as QUT policy regarding academic processes and confidentiality of student data, using the CMS, unit specific study and assignment advice, familiarisation with support services, and listening and questioning skills. The training program involves regular debriefing sessions and the opportunity for the Advisors to learn from each other’s experiences.

Call scheduling

Call scheduling using the CMS progresses through four main phases during a semester—the start of semester, the first four weeks, the first assignment submission and prior to the final

assessment. Potentially at risk students are identified at the start of semester by a combination of available cohort, equity and performance data. During the first four weeks, data regarding attendance or performance in weekly activities are added to determine where calls might best be placed. At the time when first assessment items are due, the CMS receives data regarding non-submission or failure of assessment and at this point potentially at risk students are clearly identified. During the final phase of the semester, calls are scheduled to students who have shown previous at risk indicators and advice is given about final assessment submissions and exam preparation as relevant to the target units.

There is a limit to how many phone calls can be made at any given point in the semester based on the availability of SSAs and financial and physical resources with the result that at times the demand can outstrip the supply. The implication of this is that decisions have to be made, here by the SSP Coordinator, author Duncan, to limit the list of potential callees based on priority indicators. For example, a student who has been absent and has not handed in an assignment would be given priority over a student who has been absent but has still managed to hand in their assignment. The net result is that some at risk students do not receive a call—an unfortunate but pragmatic outcome of limited resources.

Some typical scenarios

- a) In week 4, the CMS shows that Student A has missed the week 4 tutorial that included an assessment checkpoint activity (an informal submission of an upcoming assessment item to allow helpful feedback), and has self-identified himself as having a Non-English Speaking Background. A successful call is made to the student who admits he forgot about the tutorial and the checkpoint. The SSA suspects that the student is having difficulty with essay writing skills and so talks further with the student about strategies for beginning writing tasks. The Advisor also tells the student about some of the available unit support features such as tutor consultation times, the e-tutor (a “tutor” who is available electronically) and library workshops. The Advisor also helps the student identify an action plan for keeping on track with the subject. The action plan involves seeing the tutor about the missing checkpoint activity, creating an outline for the next writing task and getting feedback on the outline from the e-tutor.
- b) In week 4, the CMS shows that Student B is enrolled in 5 units and has missed two of the first tutorials in the unit being tracked by the project. The student is not home when a call is made and so a friendly email is sent listing basic tips for success in the unit. The following week the student is listed again as now having missed three tutorials in a row. Another call is made and this time the student is successfully contacted at home. The student has been working part time while struggling with the university workload and not feeling confident about their course choice. Having been given permission by the student, the Advisor arranges for the QUT Counsellor to call the student to discuss options. The Counsellor makes an appointment with the student to visit the QUT Careers Officer. The student follows this advice, confirms their course choice and changes their enrolment to part-time.
- c) In week 5, the CMS shows an International Student who has not submitted the first assessment item. The SSA calls the student who says she is relieved to be contacted. The student started the semester late, having only arrived from overseas in week 4 and is struggling to catch up with the unit. The Advisor explains to the student who to see and where they can find extra help to get back on track with the unit.

What is an important feature of these scenarios and of the underlying philosophy of the SSP is that the process is not just a friendly “hand-holding” phone call but a purposeful, albeit friendly, activity that culminates in an Action Plan for students.

What follows is a discussion of a Case Study where the SSP was implemented.

Overview of the units involved

Five first year units in one faculty at QUT were involved in the SSP during semester 1, 2008. All of the units were compulsory elements in their respective programs. Units 1-4 formed the foundation of one undergraduate program and Units 1, 2 and 5 were the foundation of a second program. A brief description of the content and relevant teaching and learning processes follows.

Unit 1 was an introductory level technical unit. Like other units of this type, it had a track record of high attrition and failure rates, although in recent years its ratings on teaching and learning scales were above the faculty’s average, which was attributed to a redesigned curriculum and new pedagogical approaches.

Unit 2 introduced students to the notion of professionalism in the discipline and used discipline-based scenarios to introduce and structure the acquisition of graduate attributes such as oral and written communication and teamwork throughout the semester.

Unit 3 focused on another aspect of the technical skills required for the discipline and like Unit 1 had a large component of “hands-on” assessable activities. Unlike Units 1 and 2 which progressively introduced skills and knowledge throughout the semester, this unit was divided into two halves. In the first half of the semester, the students created a small artefact while in the second half of the semester, they focused on a larger project to design a larger technical product.

Unit 4 introduced students to the underlying physical elements of the discipline. Its purpose was to build fundamental skills and knowledge and to ensure that students had the opportunity to explore the tangible aspects that underpin professional practices.

Unit 5 was a newly introduced unit that focused on relevance to the profession by engendering creativity and building an understanding of the social aspects of the discipline. This unit encouraged a high degree of experimentation and exploration by students.

A post hoc research design

The sample

Although a number of triggers were available to determine at risk behaviour, the non-submission or failure of the first assignment was used as the criterion because of its focus on performance and its tangible indication of engagement. The assignment varied in timing, complexity and purpose across the units, characteristics that subsequently proved to influence quite significantly the outcomes of the project. This process produced a sample of 608 (39.9%) at risk students, leaving 916 (60.1%) classified as “not at risk.” Strictly speaking, the numbers represent “student enrolments” rather than “students” as a number of students were enrolled in more than one of the units. Since the analyses are based on student behaviour in

discrete units, there is no “double counting.” There is, however, the potential for a ripple effect where a student is contacted about their behaviour in one unit and this may have some sort of flow on effect to another unit. While a cursory examination of the at risk status of students enrolled in more than one unit showed no consistent pattern, a detailed exploration of this issue is beyond the scope of this article.

Examination of the database indicated that 327 (53.8%) of the at risk students had been successfully contacted and they were designated as the at risk contacted (AR-C) group. The remaining 281 (46.2%) were not able to be contacted and were designated as the at risk not contacted (AR-NC) group. The balance of 916 students made up the not at risk (NAR) group. Information about these three sub-samples within each unit is summarised in Table 1. At QUT, students can withdraw from units at any time, the date determining the nature and extent of any academic or financial penalty. These “Withdrawn” sub-samples are also summarised in Table 1.

The research design

It is important to understand that, although an evaluation of the intervention was planned, no experimental research design was envisaged when the SSP was implemented. There are obvious ethical problems associated with any attempt to intentionally form AR-C and AR-NC groups. As indicated above, pragmatic considerations led to the situation where these two groups formed naturally and fortuitously provided groups whose engagement behaviour could be compared.

The design imposed in a post hoc manner on the data was a quasi-experimental post-test only control group design, traditionally regarded as a relatively weak design because of the lack of pre-test or baseline data. It is also acknowledged that “this design is widely used in impact assessment studies for in real life many programs operate without the benefit of a [pre-test]” (Kumar, 1996, p. 91). Further, because of the limited caller resources, the students making up the AR-C group were deemed by the SSP Coordinator to be potentially more at risk and in greater need of a phone call than others who, as a consequence, may well have ended up in the AR-NC group. Hence the “experimental” (AR-C) group could be regarded as a group who were possibly less capable, or more “at risk,” than the “control” (AR-NC) group.

The analysis

The behaviours to be compared were achievement and persistence. *Achievement* was defined as the Final Grade achieved at the end of the semester. At QUT at the time of the study, this was a 7 point scale.

- 1 - Extreme Fail
- 2 - Fail
- 3 - Low Pass
- 4 - Pass
- 5 - Credit
- 6 - Distinction
- 7 - High Distinction

The Final Grades of the AR-C and AR-NC groups were compared for each unit, using *t*-tests with Cohen's *D* used as a measure of Effect Size. Where sample sizes were problematic, the Mann-Whitney *U* test was also used.

Table 1 Details of sub-samples by unit

	Unit 1				Unit 2				Unit 3				Unit 4				Unit 5			
	AR-C	AR-NC	NAR	TOTAL	AR-C	AR-NC	NAR	TOTAL	AR-C	AR-NC	NAR	TOTAL	AR-C	AR-NC	NAR	TOTAL	AR-C	AR-NC	NAR	TOTAL
FINAL GRADE	97	46	205	348	69	19	275	363	44	22	89	155	36	9	149	194	31	22	163	216
WITHDRAWN	26	67	2	95	10	47	1	58	4	4	16	24	5	40	0	45	5	5	16	26
TOTAL	123	113	207	443	79	66	276	421	48	26	105	179	41	49	149	239	36	27	179	242

Persistence was defined by comparing the number of students who continued in the unit to achieve a Final Grade with the number of students initially enrolled in the unit, expressed as a percentage.

Results

The results of the achievement analyses are summarised in Table 2 and that of the persistence analyses in Table 3. This data indicates that

With regard to achievement:

- In Unit 1, at risk students who had been successfully contacted achieved significantly higher final grades (M=4.2; SD=2.3) than at risk students who had not been contacted (2.3; 1.5).
- In Unit 2, at risk students who had been successfully contacted achieved significantly higher final grades (5.1; 1.6) than at risk students who had not been contacted (3.3; 1.8).
- In Unit 3, there was no difference in the final grades of at risk students who had been contacted (4.8; 2.1) and at risk students who had not been contacted (4.3; 2.0).
- In Unit 4, at risk students who had been successfully contacted achieved significantly higher final grades (3.9; 1.6) than at risk students who had not been contacted (2.2; 1.4).
- In Unit 5, there was no difference in the final grades of at risk students who had been contacted (4.3; 1.6) and at risk students who had not been contacted (4.8; 1.7).

Table 2 Comparisons of average final grades of AR-C and AR-NC groups

Unit Code	Group	N	Mean	SD	<i>t</i>	<i>df</i>	<i>p</i>	<i>D</i>
Unit 1	AR-C	97	4.16	2.26	5.1	141	<.001	0.98
	AR-NC	46	2.30	1.46				
Unit 2	AR-C	69	5.14	1.60	4.31	86	<.001	1.09
	AR-NC	19	3.31	1.76				
Unit 3	AR-C	44	4.77	2.08	0.93	64	<i>ns</i>	-
	AR-NC	22	4.27	2.00				
Unit 4	AR-C	36	3.94	1.58	2.98	43	<.01	1.16
	AR-NC	9	2.22	1.39				
		Apply Mann-Whitney U Test due to small N					<i>U</i> =70	<.01
Unit 5	AR-C	31	4.32	1.58	0.99	51	<i>ns</i>	-
	AR-NC	22	4.77	1.69				

With regard to persistence:

- In Unit 1, at risk students who had been successfully contacted persisted at almost twice the rate (74.2%) than at risk students who had not been contacted (38.1%).
- In Unit 2, at risk students who had been successfully contacted persisted at more than three times the rate (87.3%) than at risk students who had not been contacted (27.3%).
- In Unit 3, there was little difference in the persistence of at risk students who had been contacted (91.7%) and at risk students who had not been contacted (84.6%).
- In Unit 4, at risk students who had been successfully contacted persisted at just under five times the rate (85.4%) than at risk students who had not been contacted (18.4%).
- In Unit 5, there was little difference in the persistence of at risk students who had been contacted (86.1%) and at risk students who had not been contacted (81.5%).

Table 3 Comparisons of persistence of AR-C and AR-NC groups

	Unit 1		Unit 2		Unit 3		Unit 4		Unit 5	
	n/N	%	n/N	%	n/N	%	n/N	%	n/N	%
AR-C	97/123	78.9	69/79	87.3	44/48	91.7	36/41	87.8	31/36	86.1
AR-NC	46/113	40.7	19/66	28.8	22/26	84.6	9/49	18.4	22/27	81.5
NAR	205/207	99.0	275/276	99.6	89/105	84.8	149/149	100.0	163/179	91.1
TOTAL	348/443	78.6	363/421	86.2	155/179	86.6	194/239	81.2	216/242	89.3

Discussion and implications

Explaining the outcomes

AR-C students achieved better and persisted more than AR-NC in Units 1, 2 and 4 but not in Units 3 and 5. Following are some speculations related to these outcomes based on observations and anecdotal evidence gathered by author Duncan throughout the semester.

- *Curriculum alignment* or *curriculum misalignment* occurs when an early first item of assessment gives or does not give students feedback on skills/understandings they need to complete later items of assessment. The former was observed in Units 2 and 4 and the latter observed in Unit 3.
- *Timeliness of calls* or *lack of timeliness of calls* where data pertaining to at risk indicators are either available early enough for calls to be placed allowing students time to improve their outcome based on the support calls or available too late to make relevant calls. In weeks 1 to 4, Unit 1 had the

highest call attempt rate while Unit 5 had the lowest.

- *Untracked Personal Contact* where curriculum activities or teaching styles result in *little* or *considerable* personal contact from the tutors. Little contact would maximise the impact of the SSAs while considerable contact could counteract their effect on the AR-C group by improving the performance of the AR-NC group. The indication was that little contact occurred in Unit 1 but considerable contact was made in Units 3 and 5.

Implications for curriculum design and beyond

Kift and Nelson (2005) make the case that “designing coherent, cumulative units to engage students in their learning experience is a fundamental tenet of transition pedagogy” (p. 225) but caution that

continual curriculum enhancement (through design and redesign) [does not] necessarily take account of the dramatically changing patterns of student engagement and the new learning environments in which modern learners should be immersed as preparation for their graduation as globally portable employees with the knowledge, skills and values needed to practice effectively in today’s dynamic work environments. (p. 225)

They suggest that for transition to be truly successful, curriculum renewal must be embedded, integrated and coordinated with institutional practices that support learners through timely service provision (QUT 2002b) and the inculcation of a sense of belonging through involvement, engagement and connectedness with their university experience (QUT 2002c). The overall objective “is to ensure that the day-to-day transactions between learners and the various aspects of their learning are seamless (particularly in those crucial first few days, weeks and months of the first year), so they can focus energy on learning” (Kift & Nelson, 2005, p. 226). In other words, transition must be imbued in a “whole of person” philosophy.

Implications for an holistic approach to engagement

The aim of the SSP is, through a proactive and timely personal contact with potentially at risk students, to enhance the transition of commencing students into QUT. The SSP is an operational arm of the FYE program which has the tripartite focus on personal, social (QUT, 2002c) and academic (QUT, 2002a, 2002b) competencies, a focus which promotes an holistic approach to facilitating student engagement.

Limitations and future directions

The most obvious limitation of this study is its restriction to one faculty and consequently, the most obvious extension of this project is to move beyond that faculty. This is currently happening at QUT where the SSP is operating in eight units in five faculties. The ultimate aim by mid-2009 is to roll out the project into all faculties and plans for this to happen are well advanced.

The suggestion above by Kift and Nelson (2005) that there is an optimal curriculum design for identifying and supporting at risk students is one that is attractive for supporters of the SSP. The elements of an early piece of assessment, a cumulative and related sequence of content development and so forth need to have not only an operational but also a theoretical justification. This is currently being

explored in Nelson, Duncan, Kift, and Clarke (in process) where the characteristics of all units where the SSP has been successful or not are matched against the theoretical dimensions inherent in the First Year Curriculum Principles being developed by Kift (2008, 2009) and operationalised in the Transitions In Project (Transitions In Project Report 014, 2008).

Conclusion

This article has reported on the successful intervention by proactive personal contact with first year students designated at risk of attrition to provide them with an action plan of personal, social and academic processes and resources designed to promote student engagement with tertiary life and studies. The success of the intervention, related to both the nature and content of the contact made and the design of the curriculum, provides the confidence to expand the program beyond one faculty, a limitation that is currently being addressed in a replication of the study across five faculties at QUT. This type of intervention has significance not only for first year curriculum and pedagogy and strategic alliances between professional and academic staff but also for administrators conscious of the financial implications of attrition.

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